APPLICATION FOR UNITED STATES PATENT

INVENTORS: THOMAS E. SLOWE
               PAUL C. BREWER
               ROBERT J. DOUGLASS
               THOMAS M. STRAT

TITLE: VIDEO COLORING BOOK

ATTORNEYS' ADDRESS:

VENABLE
1201 New York Avenue, N.W., Suite 1000
Washington, D.C. 20005-3917
Telephone: (202) 962-4800
Telefax: (202) 962-8300

ADDRESS FOR U.S.P.T.O. CORRESPONDENCE:

VENABLE
Post Office Box 34385
Washington, D.C. 20043-9998

ATTORNEY DOCKET NO.:

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VIDEO COLORING BOOK

CROSS-REFERENCE TO RELATED APPLICATIONS

[1]   This application claims the priority of U.S. Patent Application No. 09/881,065,

5   filed June 15, 2001, and U.S. Patent Application No. _____, filed September 21, 2001,

Attorney Docket Number 37112-173581, both of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[2]   The invention relates to a system for video editing and, particularly, editing of

video sequences encoded to an object representation using object-based video encoding to

implement a video coloring book.

Background of the Invention

15   [3]   In object-based video encoding (or representation), a video sequence is encoded

as (or decomposed to or converted to) a decomposed video sequence comprising two streams, a

first stream for a background composite of the video sequence and a second stream for

foreground regions of the video sequence. The background composite is encoded only once in

the first stream. On the other hand, the foreground regions are moving and are encoded for every

20   frame of the video sequence in the second stream. The two streams of the object-based encoded

video are then stored or transmitted. The video sequence is reconstituted by composing the

decomposed video sequence to obtain a composite video sequence.

37112-174878

[4]   Object-based video encoding is different from traditional frame-based encoding, which uses only one stream. Through storing or transmitting the decomposed video sequence, significant savings in memory or bandwidth are achieved over traditional framed-based encoding in which each frame of the video sequence is stored or transmitted as a single stream. Additional memory or bandwidth savings can be achieved by compressing the two streams of the decomposed video sequence prior to storage or transmission. In addition to conventional approaches for object-based video encoding, generation of the background composite and the foreground regions is discussed in commonly-assigned U.S. Patent Application Nos. 09/472,162, filed December 27, 1999, and 09/609,919, filed July 3, 2000, both of which are incorporated herein by reference.

[5]   In conventional video editing, a video sequence is obtained, and the video sequence is edited on a frame-by-frame basis. To edit an aspect of the video sequence that appears over a number of sequential frames, each frame must be edited individually. Thereafter, if desired, the resulting modified video sequence may be encoded using object-based video encoding or any other type of video compression. This conventional technique is very laborious and time consuming.

[6]   In another conventional technique for video editing, the video sequence is encoded as a number of video layers. For each video layer, the content in the video layer changes for each frame. Further, no equivalent to the background composite discussed above for the object-based video encoding is obtained. To edit one of the video layers, a nonlinear editor (NLE) is typically used to edit the video layer on a frame-by-frame basis. To edit an aspect of the video sequence that appears over a number of sequential frames, each frame of the affected video layers must be edited individually. Although some NLE's have the ability to extrapolate a

37112-174878